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EXAMINER

MMC2/1109

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ART UNIT	PAPER NUMBER
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2839

DATE MAILED:

11/09/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/364,788

Applicant(s)
Eldridge et al.

Examiner
Son Nguyen

Group Art Unit
2839



☒ Responsive to communication(s) filed on Sep 11, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

- ☒ Claim(s) 1-16, 31, 32, and 39-42 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-16, 31, 32, and 39-42 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☒ The drawing(s) filed on Jul 30, 1999 is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the structural features of a bond pad connected to a microelectronic device, a contact element disposed on the bond pad in claim 3, a re-distributed conductor connected to a microelectronic device, the contact element disposed on the re-distributed conductor in claim 4, a bond pad connected to a test equipment, the contact element disposed on the bond in claim 5, a bond pad connected to a microelectronic device, the second portion of said second contact element disposed on the bond pad, and the first substrate is one of (1) a test probe assembly and (2) a package microelectronic device in claim 32, a curved slope in a sacrificial layer which is removed to release said resilient contact element in claims 41-42, must be shown or the feature canceled from the claim. No new matter should be entered.
3. Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

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4. The drawings are objected to because *insulative* and *conductive* layers in figures 2A-D, 4, 6A-L, 7A-B, 8A and 9A-D, should be cross-hatched as such. Figure 3D is not a cross section view, the cross-hatch should be deleted. Correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 3-5, 32 and 41-42 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The subject matter of "*a bond pad connected to a microelectronic device, said contact element disposed on said bond pad*" in claim 3, "*a re-distributed conductor connected to a microelectronic device, said contact element disposed on said re-distributed conductor*" in claim 4, "*a bond pad connected to a test equipment, said contact element disposed on said bond*" in claim 5, "*a bond pad connected to a microelectronic device, said second portion of said second contact element disposed on said bond pad, and said first substrate is one of (1) a test probe assembly and (2) a packagemicroelectronic device*" in claim 32, a curved slope in a

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sacrificial layer which is removed to release said resilient contact element in claims 41-42,
which were not described in the original specification.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-16, 31-32 and 39-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 4-5, the phrase “adapted to” and “capable of” have been held that the recitation that an element performs a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138, 33 CCPA 879 (1946). MPEP 706.03(c). In lines 3-6, applicant should clarify what applicant intends by “a first portion of said contact moving from the first portion to a second portion when a force is applied to the first portion of said contact element” because it is unclear. Since a first portion of the contact element can not move from a first position to a second position if a force is only applied to a instant location such as at the first portion of the contact element. In lines 7-8, applicant should define and clarify what applicant intended by “said stop structure defining said second position.” Does applicant intend by a top surface of the stop structure defining said second position?

Claim 2, lines 1-2, there is no antecedent basis for “said contact elements.”

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Claim 6, applicant should clarify "said contact element is resilient and when said force is applied to said first portion." It is unclear because when the force is applied to the first portion of the contact element, the contact element is still stationary. Therefore, there is no force from the stop structure presses against the second portion of the contact element.

Claim 16 is unclear, applicant should clarify what does applicant intended by "a vertical height of a shortest contact element that is statistically likely to exist."

Claim 31 has a similar rejection as claim 1.

Claim 40, applicant should clarify what applicant intended by "said resilient element is freestanding when released after being initially formed."

Claim 41, the limitation "a sacrificial layer which is removed to release said resilient contact element" has no significance to the structure and it is drawn to a step of a making process.

Claims 40-42, line 1, applicant should replace "A" by --The.--

Applicant is required extensively review and revise each claims 1-16, 31-32 and 39-42.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

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has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

10. Claims 1, 6-16, 31, 39-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al. (US 5,944,537).

Smith et al. discloses an interconnect assembly [figures 6, 12, 29 and 31] comprising:

- a plurality of elongate resilient (spring) contact elements [15, figure 31];
- each of spring contact elements [15, figure 6] having a first free portion [11] and a second anchor portion [12], wherein the first portion has a curve slope relative to a surface of the substrate [figure 6], and the first portion is deflected from a first position [figure 6] to a second position [figure 29] when a force from another contact element [3] of another substrate [34, figure 29,] is applied to a tip end [30] of the first portion;
- wherein the another contact element [3] is a terminal end of a communication line which electrically communicates with an electronic device formed on the substrate or device [101] such as transistor, a display electrode, or other electrical device [column 5, lines 22-25];
- a stop structure [36, figure 29] disposed on the second portion, wherein the stop structure defining the second position [figure 29];
- the contact element having either one metal layer [column 5, lines 8-9] or two metal layers [column 5, lines 27-31];
- the tip end of the contact element has a maximum height [b, figure 6] from the surface of the substrate, and a predetermined height [figure 6]; and

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- the first portion of the contact element has a triangular shape and a third portion is a point of the triangular shape [figure 16].

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al.

Smith et al. discloses the instant claimed invention including a pitch of two adjacent contact elements having a range of 20-12- microns [column 8, lines 44-45]. However Smith et al. does not disclose the pitch having a range of 2.5-2000 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the pitch range of the two adjacent element contacts of Smith et al. to have a range of 2.5-2000 microns in order to accommodate with a fine corresponding pitch of mating contacts of the another substrate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

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Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Smith et al. (US 5,613,861), Faraci et al. (US 5,810,609) and Grabbe et al. (US 5,152,695) show the alternate designs of the spring contacts.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son Nguyen whose telephone number is (703) 308-8745.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus, can be reach on (703) 308-3119. The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1782 .

Son Nguyen

SN

November 4, 2000


Brian Sircus
Primary Examiner